

Remarks

In the Office Action of July 21, 2005, the Examiner rejected claims 1-4, 7, and 9-12 under 35 U.S.C. § 102(e) as being unpatentable over U.S. Patent No. 6,163,528 to Nagamoto ("Nagamoto"). For the following reasons, Applicant respectfully traverses this rejection.

By this Amendment, Applicant has amended claims 1-4, 7, 9, and 10 to improve form. The Title and the Abstract have also been amended. Claims 1-4, 7, and 9-12 are currently pending.

A proper rejection under 35 U.S.C. § 102 requires that a single reference teach every aspect of the claimed invention either expressly or impliedly. Any feature not directly taught must be inherently present. In other words, the identical invention must be shown in as complete detail as contained in the claim. See M.P.E.P. § 2131. Nagamoto does not disclose or suggest the combination of features recited in any of claims 1-4, 7, and 9-12.

Claim 1, for instance, is directed to a multiplexing apparatus that includes detection means for detecting a congestion state corresponding to received cells from the subscribers and outputting a level value corresponding to the congestion state, where the level value indicates an amount of congestion. The apparatus additionally includes discard means for selectively discarding the received cells from the subscribers based on a communication state determined by cells received from the switching unit and cells received from the subscribers and based on the level value of the congestion state.

Nagamoto does not disclose each feature of claim 1. Nagamoto, for example, does not disclose or suggest the discard means recited in claim 1, which selectively discards the received cells from the subscribers based on a communication state determined by cells received from the switching unit and cells received from the subscribers and based on the level value of the congestion state. Nagamoto, in contrast, in no way discloses or suggests the communication state recited in claim 1, much less discard means that selectively discards cells based on the communication state and based on the level value of a congestion state.

Nagamoto generally discloses a selective cell discard system in an ATM switch. (Nagamoto, Title). In Fig. 2, Nagamoto illustrates a number of selective cell discard controllers (PD). The operation of the PDs are said to relate to a congestion state of the cell buffers (CBs) shown in Fig. 2 and on a service class of the cells. (See Nagamoto, col. 4, lines 6-9). Basing a cell discard operation on a congestion state and/or the service class of cells, as disclosed by Nagamoto, does not reasonably correspond to the discard means recited in claim 1, which selectively discards the received cells from the subscribers based on, among other things, a communication state determined by cells received from the switching unit and cells received from the subscribers. The congestion state of the cell buffers of Nagamoto cannot be said to be a communication state determined by cells received from the switching unit and cells received from the subscribers. Similarly, the service class of a cell in Nagamoto is not equivalent to the communication state recited in claim 1.

In rejecting claim 1, the Examiner points to a number of sections of Nagamoto as allegedly disclosing the discard means recited in claim 1. In particular, the Examiner points to Fig. 2; col. 2 lines 45-66; col. 3 lines 46-55; col. 4, line 7 through col. 5, line 40; and col. 4, line 15. (Office Action, page 3). Applicant respectfully disagrees with the Examiner's interpretation of Nagamoto.

Column 2, lines 45-66 of Nagamoto describes a switch of Nagamoto as including, among other things, a selective discard controller and means for detecting congestion in a cell buffer, the means for detecting "discard-controlling" cells. The selective discard controller of Nagamoto, as described above, discards cells based on a congestion state and/or the service class of cells, but is not disclosed or suggested as discarding cells based on the communication state recited in claim 1.

The Examiner additionally points to portions of columns 3 through 5 of Nagamoto as allegedly disclosing the discard means recited in claim 1. These sections of Nagamoto relate to the operation of the cell buffers (CBs) and selective cell discard controllers (PDs) of Nagamoto. Column 4 of Nagamoto, for instance, states in pertinent part:

The cell discard control varies depending on the service class of cell. In a class such as CBR (constant bit rate), rt-VBR (real time variable bit rate) and nrt-VBR (non real time variable bit rate), the connection is set by CAC (connection admission control) according to the throughput characteristic. Therefore, even when the cell discard by the overflow of cell buffer at CB1 of SW1 occurs, it does not give a serious influence to the traffic of other class or other output port.

... Next, the cell discard control at PD is conducted according to the congestion state at the cell buffer CB1 for output port group,

where a threshold value (for example, a common threshold value to all the buffers) to each of the buffers CB1-1 to -y is preset and the number of staying cells in a concerned buffer and its threshold are compared. If the number of staying cells  $\geq$  preset threshold value . . . (1), the signal of logic "1" is output, and if it is not so, the signal of logic "0" is output. These signals are hereinafter referred to as "a back pressure signal (or abbreviated as 'BP')".

The selective cell discard controllers PD1 to PDx check the logic of signal BP from a passed cell buffer of the cell buffers CB1 for output port group according to routing information of the input cell. When at least one signal of "1" exists, BP to the concerned input cell is processed as logic "1"(congestion existing).

(Nagamoto, column 4, lines 8-16 and 34-49). As described in these sections of Nagamoto, cell discard control is based on factors such as the service class of a cell and the congestion state at the cell buffers. These factors do not disclose or suggest the discard means recited in claim 1, which selectively discards the received cells from the subscribers based on, among other things, a communication state determined by cells received from the switching unit and cells received from the subscribers. The service class of a cell, in particular, cannot be said to equivalent to the communication state recited in claim 1. As noted by the Examiner, predetermined criteria of a cell such as quality of service (QoS) and service class may be preset logic criteria determined by a user. (see Office Action, pages 3 and 5). Logic criteria preset by a user is significantly different from a communication state determined by cells received from a switching unit and cells received from subscribers.

For at least these reasons, Applicant submits that Nagamoto does not disclose each of the features recited in claim 1. Accordingly, the rejection of this

claim under 35 U.S.C. § 102(e) is improper and should be withdrawn. The rejections of claims 2-4 and 7 under 35 U.S.C. § 102(e) is also improper, at least by virtue of the dependency of these claims from claim 1. Additionally, claims 2-4 and 7 independently recite features not disclosed or suggested by Nagamoto.

Claim 2, for example, recites that the communication state of claim 1 is updated on the basis of header information included in the received cells from the switching unit and header information included in the received cells from the subscribers. As previously discussed, Nagamoto does not disclose or suggest the communication state recited in claim 1. Nagamoto could therefore not possibly disclose or suggest updating the communication state in the specific manner recited in claim 2.

In rejecting claim 2, the Examiner appears to contend that Nagamoto discloses ATM cells and that header information is inherent in ATM cells. From this, the Examiner concludes that "one skilled in the art will appreciate that a given ATM system updates its queues and switches based on received ATM packets based on its header information." (Office Action, page 3). Applicant submits that the Examiner is ignoring features recited in claim 2. Claims 1 and 2 recite more than simply updating a switching unit based on cell header information. Instead, claim 2 recites that the communication state, which is used by the discard means as recited in claim 1, is updated in the specific manner recited in claim 2. Nowhere does Nagamoto disclose updating any type of communication state information that is then used by the selective cell discard controllers of Nagamoto, much less updating the communication state

information in the specific manner recited in claim 2. For at least these additional reasons, claim 2 is not anticipated by Nagamoto.

Claim 4 also further defines the features of claim 1, and recites that the discard means further includes switching unit monitor means and subscriber monitor/selection means. The switching unit monitor means receives the cells from the switching unit and outputs header information of the received cells from the switching unit as first header information. The subscriber monitor/selection means receives the cells from the subscribers and outputs header information of the received cells from the subscribers as second header information and selectively discards the received cells from the subscribers on the basis of a discard command. Further, as recited in claim 4, the discard means updates status data indicating the communication state on the basis of the first header information or the second header information and generates a discard command for commanding discard of the received cells from the subscribers on the basis of the updated status data and the level value of a warning signal.

The Examiner rejects claim 4 under the same rationale as that used for claim 2. For reasons similar to those given with regard to claim 2, Applicant submits that Nagamoto does not disclose or suggest the features of claim 4. Nagamoto, for example, cannot be said to, as is recited in claim 4, update status data indicating the communication state on the basis of first header information or second header information and generate a discard command for commanding discard of the received cells from the subscribers on the basis of the updated

status data and a level value of the warning signal. For at least these additional reasons, claim 4 is not anticipated by Nagamoto.

Independent claim 9 also stands rejected under 35 U.S.C. § 102(e) based on Nagamoto. Applicant respectfully traverses the rejection.

Claim 9 is directed to a method of discarding cells. The method includes receiving cells sent from subscribers and detecting a congestion state of the received cells from the subscribers and updating a communication state determined based on the received cells from the subscribers and based on received cells from a switching unit. The method of claim 9 further includes deciding, to obtain a decision result, whether discard processing of the received cells from the subscribers is performed on the basis of the updated communication state and a level value of a signal indicating the congestion state, said level value indicating an amount of congestion. Further, the method of claim 9 includes selectively performing the discard processing on the basis of the decision result.

As previously mentioned, although Nagamoto may be said to discard cells in a switching unit, Nagamoto does not disclose or suggest discarding cells based on a communication state and a level value of a signal indicating a congestion state, in which, as recited in claim 9, the communication state is updated based on received cells from subscribers and based on received cells from a switching unit. Instead, Nagamoto explicitly discloses cell discard control based on factors such as the service class of a cell and the congestion state at

the cell buffers. Accordingly, Nagamoto cannot be said to disclose each of the features of claim 9.

For at least these reasons, the rejection of claim 9 under 35 U.S.C. § 102(e) is improper and should be withdrawn.

Independent claim 10 and its dependent claims 11 and 12 also stand rejected under 35 U.S.C. § 102(e) based on Nagamoto. Applicant respectfully traverses this rejection of claim 10.

Claim 10, as amended, is directed to a multiplexing device including a discard control component configured to maintain communication state information determined based on header data of cells received from a switch and a subscriber. The device of claim 10 further includes a detection component including a queue for storing cells from the subscriber and a comparison component configured to compare a degree of occupancy of the queue to a threshold to obtain a congestion level corresponding to an amount of congestion of the queue. The discard control component selectively discards cells received from the subscriber based on the congestion level and the communication state information.

Nagamoto does not disclose each of the features recited in claim 10. Nagamoto, for example, does not disclose or suggest a multiplexing device including a discard control component configured to maintain communication state information determined based on header data of cells received from a switch and a subscriber, the discard control component selectively discarding cells received from the subscriber based on the congestion level and the



communication state information. Nagamoto may be said to discard cells in a switching unit. Nagamoto, however, does not disclose or suggest, as is recited in claim 10, a discard control component that selectively discards cells received from a subscriber based on a congestion level and based on communication state information, in which the communication state information is determined based on header data of cells received from a switch and a subscriber.

In rejecting claim 10, the Examiner notes that "each discard controller [of Nagamoto] performs selective cell discard based on preset logic criterias as determined by the user." (Office Action, page 5, citing column 4, lines 7-57 of Nagamoto). Portions of this cited section of Nagamoto are quoted above.

Although Nagamoto, in this cited section, may disclose cell discard control based on factors such as the service class of a cell and the congestion state at the cell buffers, it can be appreciated that discarding cells based on service class information or congestion state of cell buffers is significantly different than, as recited in claim 10, selectively discarding cells based on communication state information, in which the communication state information is determined based on header data of cells received from a switch and a subscriber, as recited in claim 10.


For at least these reasons, Applicant submit that Nagamoto does not disclose or suggest each feature of claim 10 and the rejection of this claim under 35 U.S.C. § 102(e) is improper and should be withdrawn. The rejections of claims 11 and 12 under 35 U.S.C. § 102(e) should also be withdrawn, at least by virtue of their dependency from claim 10.

In view of the foregoing amendments and remarks, Applicant respectfully requests the Examiner's reconsideration of this application, and the timely allowance of the pending claims.

To the extent necessary, a petition for an extension of time under 37 CFR 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

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Attachment: Abstract